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ABSTRACT

Twenty-four deaf children (6 to 10 years old) were individually administered a task in which possession of accumulating candy rewards was made contingent upon the child stopping further accumulation. Ss, who under instruction periodically signed statements about the goodness of the reward, waited significantly longer before terminating the waiting period than did deaf children instructed to sign statements about the act of waiting and somewhat longer than did deaf children instructed to sign a neutral statement. As the pattern of delay was unlike that reported when nonhandicapped children verbalize similar statements the results were interpreted in terms of the functional differences between signed and spoken language. (Author)

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Signed Statements and Delay of Gratification in Deaf Children

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Abstract

Deaf children were individually administered a task in which possession of accumulating candy rewards was made contingent upon the child stopping further accumulation. Deaf children, who under instruction periodically signed statements about the goodness of the reward, waited significantly longer before terminating the waiting period than did deaf children instructed to sign statements about the act of waiting and somewhat longer than did deaf children instructed to sign a neutral statement. As the pattern of delay was unlike that reported when non-handicapped children verbalize similar statements, the results were interpreted in terms of the functional differences between signed and spoken language.

Self-imposed delay of gratification can be considered as a phenomenon of two phases. The first phase involves the choice between delayed or immediately available rewards. The second phase involves the processes employed by the individual to maintain delay through a waiting period. Delay maintenance in children has been found to be affected by manipulations aimed directly at the cognitive and attentional activity of the waiting child. For example, children instructed to think about and/or attend to delayed rewards demonstrated significantly lower levels of delay maintenance than did children instructed to distract themselves while waiting (Mischel & Ebbesen, 1970), and children instructed to think of "fun things" were found to successfully maintain delay when compared to children thinking "sad thoughts" (Mischel, Ebbesen, & Zeiss, 1972).

Recent studies have sought to determine the role of the child's verbal activity during a waiting period in delay maintenance. The relationship between verbalization and self-regulation in children has been of central concern to both Soviet (e.g., Luria, 1961; Vygotsky, 1962) and American researchers (e.g., Bem, 1967; Hartig & Kanfer, 1973; Meichenbaum & Goodman, 1969). In a series of studies directly investigating the influence of overt verbalization on delay maintenance in children, Toner and his colleagues (Toner, 1981; Toner, Lewis, & Gribble, 1979; Toner & Smith, 1977) found that instructing children to talk aloud about the delayed reward during a waiting period made waiting for that reward more difficult and that talking about the act of waiting or about neutral things made waiting less difficult.

While research has clearly demonstrated a language-self-control

relationship in non-handicapped, verbal children, little was known of a possible language-self-control linkage in hearing-impaired, nonverbal children. The development of sign language by deaf children has been found to resemble the development of spoken language by hearing children with similarities reported in the acquisition of grammer, meaning and combinations of symbols (e.g., Dale, 1976; Klima & Bellugi, 1972; Schlesinger & Meadow, 1972). On the other hand, several researchers have noted that the deaf individual is more likely than the hearing agemate to have difficulty in controlling impulses. Altshuler, et al. (1976) reported that deaf adolescents were more impulsive and displayed less ability to inhibit motor behavior than hearing adolescents and that the loss of auditory imput was largely responsible for the low level of impulse control in these deaf subjects. Harris and Glenwick (1977) reported that, while nine- and ten-year old deaf children of hearing parents had more delayed response times on a measure of conceptual tempo, these children made more errors on the task than did hearing children. This inefficient use of time by deaf children in problem-solving situations was attributed to their limited verbal skills (which would result in less differentiated and less integrated cognitive skills) and to the interpersonal isolation and the disrupted parent-child relationships from infancy onwards which characterize the socialization of deaf children with hearing parents. Such socialization also might contribute to reported affective deficits in deaf children which impair cognitive development and performance (Schlesinger & Meadow, 1972). However, Harris (1978) subsequently found that deaf children with deaf parents were not

as deficient as deaf children with hearing parents on measures of motor inhibition and conceptual tempo. Clearly, deafness per se is not a sufficient precursor of inadequate impulse control.

The present study was designed to determine the impact of the signing of various phrases on the delay maintenance behavior of deaf children. It was expected that deaf children would respond to self-generated signs during the waiting period.

Regarding the specific pattern of delay maintenance which would result from the signing of specific statements, deaf children might have been similar to hearing children who waited more effectively when uttering task-centered or neutral statements rather than reward-centered statements. However, a different reaction to the statements might be noted in these children using the manual mode of communication. On one level, signing a reward-centered statement might make the delay task more "fun" for the deaf children who, unlike hearing children, might experience and express more extreme positive emotions while communicating reward-centered statements due to their relatively stimulus-impoverished environment and their generally high level of emotionality (Schlesinger & Meadow, 1972). On a more fundamental level, recent research has indicated that, while the left hemisphere of the brain appears more involved with verbal processing in both deaf and hearing individuals, it is the right hemisphere which is more involved in the processing of sign language (Poizer & Lane, 1979). Thus, predictions regarding the effects of signs on the deaf child's self-control should not be based solely on the effects of spoken words on the hearing child's self-control.

Method

Twelve girls and 12 boys from the Virginia School for the Deaf and the Blind served as subjects. The children were aged six to ten years ($\bar{x}$=101.5 months, SD=16.4 months) and had hearing losses of 70 db. or more with the onset of their deafness detected by late infancy. All of the children were not otherwise handicapped and all had hearing parents. Fifteen of the children were white and nine were black. The children were individually tested by a white female experimenter moderately conversant in American sign language who was aided by an adult interpreter from the institution.

Balancing for sex of subject, the sample was evenly and randomly divided into three experimental conditions. These conditions varied as to the particular statement the children were instructed to sign periodically during the delay of gratification task.

Each child was seated at a table opposite the experimenter and the interpreter. With the aid of the interpreter, the experimenter then signed the rules for the delay maintenance task (the "candy game") to the child. These rules stated that all of the M & M candy that was to be put on the table in front of the child would belong to the child and that these candies would accumulate, one at a time, until the child took them or asked the experimenter to stop. In order to initiate signing by the child, the experimenter informed the child that a second game would be played simultaneously with the candy game. The child was to overtly sign a specific phrase whenever a red signal light controlled by the experimenter

went on. The eight children in the reward-sign condition were to sign "the candy will taste good" whenever the light was lit. Children in the rule-sign condition were to sign "it is good to wait" whenever the light was lit. Children in the neutral-sign condition were to sign "one, two, three, four, five" whenever the light was lit.

Once begun, the sequence of events for all subjects was as follows: The experimenter placed one candy on the table in front of the child and signed "You can take the candy now or you can wait for more if you want to." Five seconds after signing the alternatives, the experimenter turned on the red signal light and the child signed the appropriate phrase of the experimental condition to which he/she had been assigned. Thirty seconds after the placement of the previous M & M candy, the sequence was repeated (unless the child took the candy) and the candy accumulated in front of the child. After 600 seconds, if the child had not stopped the game, the experimenter said that the game was over and the child was given the accumulated candy.

All children successfully signed the correct phrase at the proper times and post-experimental questioning of all subjects revealed that all children understood the rules of the games.

Results

Preliminary one-way analyses of variance revealed no significant effects attributable to race or sex of subject and data from both races and sexes were combined for the primary analysis.

Due to heterogeneity of variance, Mann-Whitney U tests were used to

assess the effect of the experimental treatments. Children in the reward-sign condition, with a mean delay maintenance of 600.0 seconds, waited significantly longer before terminating delay than did children in the rule-sign condition who averaged 312.5 seconds of delay ($U=12$, $p<.05$, two tailed), and somewhat longer than did children in the neutral-sign condition who averaged 373.4 seconds of delay ($U=16$, $p<.07$, two-tailed). All eight of the children in the reward-sign condition waited the full 600 seconds while three of the children in the rule-sign condition and four of the children in the neutral-sign condition waited the maximum duration. Children in the rule-sign condition did not significantly differ in delay time from children in the neutral-sign condition.

Discussion

The level of delay maintenance demonstrated by hearing-impaired children was significantly affected by the content of the statements they signed while waiting. The exact nature of the relationship between language and self-control in the deaf children was unlike that reported when non-handicapped children spoke the statements used in the present study (Toner & Smith, 1977). Specifically, a comparison of performance between the children in the present investigation and the children of the earlier study suggests that it is the facilitation due to the reward-centered statement on the deaf child's self-control (rather than any impairment due to the use of rule-centered or neutral statements) that account for the pattern of delay demonstrated in the present study. What had always proved to be an inefficient strategy to promote self-control in the non-handicapped child (i.e., using the reward-centered statement) was

an efficient strategy for the deaf child. Deaf children may have experienced heightened positive affect when signing the reward-centered statement in comparison to hearing children who verbalized the same statement. Children who are in a positive affective mood have been found to be more likely to prefer delayed rather than immediate rewards (Moore, Clyburn & Underwood, 1976). As all of the deaf children had hearing parents, their affective arousal was relatively more likely to be elevated by the manipuations of the present study. Further, the pattern of results of the present study may have been due, in part, to the functional differences between signed and spoken language. If indeed signs are processed in a different cerebral hemisphere than are spoken words, the cognitive representation resulting from signing may not unduely focus on the consummatory aspects of the delayed reward and, thus, such a representation would facilitate rather than impede self-control (Mischel & Baker, 1975).

The present study clearly demonstrated that caution must be used in predicting the reaction of hearing-impaired children to techniques which have been shown to facilitate self-control in non-handicapped children. Deaf children, even when they are from homes with speaking parents, can demonstrate high levels of impulse control. However, the optimal strategy they should employ may be quite different from the optimal strategy for their hearing agemates.

References

Altshuler, K. Z., Deming, W. E., Vollenweider, J., Rainder, J. E., & Tendler, R. Impulsivity and profound early deafness: A cross cultural inquiry. American Annals of the Deaf, 1976, 121, 331-345.

Bem, S. L. Verbal self-control: The establishment of effective self-instruction. Journal of Experimental Psychology, 1967, 74, 485-491.

Dale, P. S. Language development: Structure and function. New York: Holt, 1976.

Harris, R. I. The relationship of impulse control to parent hearing status, manual communication, and academic achievement in deaf children. American Annals of the Deaf, 1978, 123, 52-67.

Harris, R. I., & Glenwick, D. S. Reflection-impulsivity in deaf and hearing children. Paper presented at Midwestern Psychological Association, Chicago, May 1977.

Hartig, M., & Kanfer, F. H. The role of verbal self-instructions in children's resistance to temptation. Journal of Personality and Social Psychology, 1973, 25, 259-267.

Klima, E. S., & Bellugi, U. The signs of language in child and chimpanzee. In T. Alloway (Ed.), Communication and affect. New York: Academic Press, 1972.

Luria, A. R. The role of speech in the regulation of normal and abnormal behavior. New York: Pergamon Press, 1961.

Meichenbaum, D. H., & Goodman, J. Training impulsive children to talk to themselves. Journal of Abnormal Psychology, 1971, 77, 115-126.

Mischel, W., & Baker, N. Cognitive appraisals and transformations in delay behavior. Journal of Personality and Social Psychology, 1975, 31, 254-261.

Mischel, W., & Ebbesen, E. B. Attention in delay of gratification. Journal of Personality and Social Psychology, 1970, 16, 329-337.

Mischel, W., Ebbesen, E. B., & Zeiss, A. R. Cognitive and attentional mechanisms in delay of gratification. Journal of Personality and Social Psychology, 1972, 21, 204-218.

Moore, B. S., Clyburn, A., & Underwood, B. The role of affect in delay of gratification. Child Development, 1976, 47, 273-276.

Poizer, H., & Lane, H. Cerebral asymmetry in the perception of American sign language. Brain and Language, 1979, 7, 210-226.

Schlesinger, H. S., & Meadow, K. P. Sound and sign: Childhood deafness and mental health. Berkeley, Calif.: University of California Press, 1972.

Toner, I. J. Role involvement and delay maintenance behavior in preschool children. Journal of Genetic Psychology, 1981, 138, 245-251.

Toner, I. J., Lewis, B. C., & Gribble, C. M. Evaluative verbalization and delay maintenance behavior in children. Journal of Experimental Child Psychology, 1979, 28, 205-210.

Toner, I. J., & Smith, R. A. Age and overt verbalization in delay maintenance behavior in children. Journal of Experimental Child Psychology, 1977, 24, 123-128.

Vygotsky, L. S. Thought and language. Cambridge, Mass.: M.I.T. Press, 1962.

Footnote

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